

**REMARKS**

Claims 4-80 are pending in the application. Claims 6 and 54-80 are objected to. Claims 4-80 are rejected. Claims 4, 25, 45, 54, and 67 are independent. Claims 4, 25, 45, 54 and 67 have been amended to include the subject matter of dependant claims. Claims 7, 28, and 50 have been amended to correct dependency issues created by certain claim cancellations. No new matter has been added. Because claims have been amended to recite subject matter originally claimed, Applicant understands that any future rejection of claims based on new art is to be non-final.

**Claim Objections**

Claim 6 is objected to because of a typographical error in the word “quanternions” in line 1. Claim 6 is amended to correct the typographical error. Accordingly, Applicants request that the objection to claim 6 be withdrawn.

Claim 54 is objected to because of a typographical error in the phrase “for for processing” in line 12. Claim 54 has now been amended to delete the second occurrence of “for.” Accordingly, Applicants request that the objection to claim 54 be withdrawn.

Claims 54-80 are objected to under 35 CFR § 1.75 (d)(1) as failing to particularly point out and distinctly claim the subject matter which the Applicants regard as their invention or discovery. The Examiner has indicated the phrases “the at least one cluster of markers” and “said configuration data” in Claim 54 lack antecedent basis. Claim 54 has now been amended as suggested by the Examiner. Accordingly, Applicants request that the objection to claim 54 under 35 CFR. § 1.75 (d)(1) be withdrawn.

**Claim Rejections under 35 USC § 102****I. Rejection of Claims 4, 15-18, 22-26, 35-38, and 42-44 under 35 U.S.C. §102(b)**

Claims 4, 15-18, 22-26, 35-38 and 42-44 are rejected under 35 USC 102(b) as being anticipated by Kunii et al., (U.S. Patent No. 5,625,577 (“Kunii”). Applicants respectfully traverse the rejections on the basis of the above amendments and following arguments.

Summary of Claimed Invention

Applicants' invention is directed to a system and method for displaying kinematic and kinetic information of a subject. The system and method provides a full four-dimensional analysis (three space dimensions, one time dimension) of human movement data captures by a motion analysis system. The invention enables detailed biomechanical analysis of human movement data, as well as the visualization of data.

Summary of Kunii Patent

The Kunii patent discloses a method for analyzing and displaying motions of a human being or an animal using a computer in an interactive manner without requiring trial and error or without depending on intuition of an analyst.

Amended Claims 4 and 25 and Their Dependent Claims Are Patentable Over KuniiA. Amended Claim 4

Applicants have amended claim 4 to incorporate a portion of the subject matter of dependant claim 6. As such, Kunii does not disclose a method for modeling a subject to obtain kinematic and kinetic data including the use of quaternions. The Examiner admits that the use of quaternions is not disclosed by Kunii in the present office action (see paragraph 7). As claims 15-18, and 22-24 depend either directly or indirectly from amended claim 4 and thereby incorporate the patentable features of claim 4, Kunii also fails to disclose each and every element of claims 15-18, 22-24.

Therefore, in view of the above amendments and arguments, Applicants respectfully request the Examiner to reconsider and withdraw the rejection of claims 4, 15-18, and 22-24 under U.S.C. § 102(b).

B. Amended Claim 25

Applicants have amended claim 25 to incorporate the use of quaternions. As such, for the same reasons discussed above in the discussion of claim 4, Kunii does not disclose the use quaternions and therefore does not anticipate amended claim 25. Claim 26 has been cancelled. As claims 35-38 and 42-44 depend directly or indirectly from amended claim 25 and thereby

incorporate the patentable features of amended claim 25, Kunii also fails to disclose each and every element of claims 35-38 and 42-44.

Therefore, in view of the above amendments and arguments, Applicants respectfully request the Examiner to reconsider and withdraw the rejection of claims 26, 35-38 and 42-44 under U.S.C. § 102(b).

## **II. Rejection of Claims 45, 46, 48, 51, 52, 54-56, 64-70 and 78-80 under 35 USC §102(b)**

Claims 45, 46, 48, 51, 52, 54-56, 64-70 and 78-80 are rejected under 35 USC 102(b) as being anticipated by Nesbit et al., U.S. Patent No. 5,772,522 ("Nesbit"). Applicants respectfully traverse the rejections on the basis of the above amendments and following arguments.

### **Summary of Nesbit Patent**

The Nesbit patent discloses a method and system for simulating and analyzing a motion an active body with an implement, for example, the golf swing of a golfer with a golf club.

### **Amended Claims 45, 54, and 67 and Their Dependent Claims Are Patentable Over Nesbit**

#### **A. Amended Claim 45**

Applicants have amended claim 45 to incorporate the subject matter of claim 49 regarding performing time differentiation and integration utilizing the kinetic and kinematic data. The Examiner admits that Nesbit does not disclose performing time differentiation and integration utilizing the kinetic and kinematic data (See paragraph 11 of the Office Action). As claims 46, 48 and 51-52 depend directly or indirectly from amended claim 45 and thereby incorporate the patentable features of amended claim 45, Nesbit also fails to disclose each and every element of claims 46, 48, and 51-52.

Therefore, in view of the above amendments and arguments, Applicants' respectfully request the Examiner to reconsider and withdraw the rejection of claims 45, 46, 48, 51, and 52 under U.S.C. § 102(b).

#### **B. Amended Claim 54**

Applicants have amended claim 54 to incorporate the use of quaternions. The Examiner admits that Nesbit does not disclose the use of quaternions (see paragraph 7 of the present Office

Action). As claims 55-56 and 64-66 depend directly or indirectly from amended claim 54 and thereby incorporate the patentable features of amended claim 54, Nesbit fails to disclose each and every element of claims 55-56 and 64-66.

Therefore, in view of the above amendments and arguments, Applicants' respectfully request the Examiner to reconsider and withdraw the rejection of claims 54-56 and 64-66 under U.S.C. § 102(b).

C. Amended Claim 67

Applicants have amended claim 67 to incorporate the use of quaternions. The Examiner admits that Nesbit does not disclose the use of quaternions (see paragraph 7 of the present Office Action). As claims 68-70 and 78-80 depend directly or indirectly from amended claim 67 and thereby incorporate the patentable features of amended claim 67, Nesbit fails to disclose each and every element of claims 68-70 and 78-80.

Therefore, in view of the above amendments and arguments, Applicants' respectfully request the Examiner to reconsider and withdraw the rejection of claims 67-70 and 78-80 under U.S.C. § 102(b).

**Claim Rejections under 35 USC § 103**

**III. Rejection of Claims Under 35 U.S.C. §103 in View of Kunii and Nesbit.**

Claims 5, 7-9, 11-14, 19, 27-29, 31-34, 39, 57-59, 61-63, 71-73 and 75-77 are rejected under 35 USC 103(a) as being unpatentable over the combination of Kunii et al., U.S. Patent No. 5,625,577 ("Kunii") and Nesbit et al., U.S. Patent No. 5,772,522 ("Nesbit"). Applicants respectfully traverse the rejections on the basis of the above amendments and following arguments.

A. Claims 5, 7-9, 11-14, and 19

Claims 5, 7-9, 11-14, and 19 all depend, either directly or indirectly, from amended claim 4 and thereby incorporate the patentable features of amended claim 4. As stated above in connection with the rejection of claim 4 under 35 U.S.C. 102, claim 4 has been amended to include a portion of the subject matter of dependant claim 6, specifically the use of quaternions. The Examiner admits that neither Kunii nor Nesbit disclose the use of quaternions (See

paragraph 7 of the present Office Action). As such, neither Kunii nor Nesbit teach or suggest each and every element of claims 5, 7-9, 11-14, and 19.

Therefore, in view of the above amendments and arguments, Applicants respectfully request the reconsideration and withdrawal of the rejection of claims 5, 7-9, 11-14, and 19 under 35 USC § 103(a).

B. Claims 27-29, 31-34, and 39

Claims 27-29, 31-34, and 39 all depend, either directly or indirectly, from amended claim 25 and thereby incorporate the patentable features of amended claim 25. As discussed above in connection with the rejection of claim 25 under 35 U.S.C. 102, claim 25 has been amended to incorporate the use of quaternions. The Examiner admits that neither Kunii nor Nesbit disclose the use of quaternions. Therefore, for the reasons stated above, neither Kunii nor Nesbit teach or suggest each and every element of claims 27-29, 31-34, and 39.

Therefore, in view of the above amendments and arguments, Applicants respectfully request the reconsideration and withdrawal of the rejection of claims 27-29, 31-34, and 39 under 35 USC § 103(a).

C. Claim 57-59 and 61-63

Claims 57-59 and 61-63 depend either directly or indirectly from amended claim 54 and thereby incorporate the patentable features of amended claim 54. As discussed above, Applicants have amended claim 54 to incorporate the use of quaternions. The Examiner has admitted that neither Kunii nor Nesbit disclose the use of quaternions. Therefore, neither Kunii nor Nesbit teach or suggest each and every element of claims 57-59 and 61-63.

Therefore, in view of the above amendments and arguments, Applicants respectfully request the reconsideration and withdrawal of the rejection of claims 57-59 and 61-63 under 35 USC § 103(a).

D. Claims 71-73 and 75-77

Claims 71-73 and 75-77 depend either directly or indirectly from amended claim 67 and thereby incorporate the patentable features of amended claim 67. As discussed above in connection with the rejection of claim 67 under 35 USC § 102, Applicants have amended claim 67 to incorporate the use of quaternions. The Examiner admits that neither Kunii nor Nesbit

disclose the use of quaternions. Therefore, neither Kunii nor Nesbit teach or suggest each and every element of claims 71-73 and 75-77.

Therefore, in view of the above amendments and arguments, Applicants respectfully request the reconsideration and withdrawal of the rejection of claims 71-73 and 75-77 under 35 USC § 103(a).

#### **IV. Rejection of Claim 6 under 35 U.S.C. §103**

Claim 6 is rejected under 35 USC 103(a) as being unpatentable over the combination of Kunii et al., U.S. Patent No. 5,625,577 (“Kunii”) and Nesbit et al., U.S. Patent No. 5,772,522 (“Nesbit”), further in view of Handelman et al., U.S. Patent No. 6,057,859 (“Handelman”). Applicants respectfully traverse the rejection on the basis of the above amendments and following arguments and further contend that there is no suggestion or motivation to combine Handelman with Kunii or Nesbit.

#### **Summary of Handelman Patent**

Handelman discloses a method and apparatus for interactively controlling and coordinating the limb movements of computer-generated articulated.

#### **There is No Suggestion to Combine Handelman with Kunii and Nesbit.**

A portion of the subject matter of claim 6 has been added to independent claims 4, 25, 54, and 67. Applicants respectfully contend that the Examiner’s statement that “Kunii, Nesbit and Handelman are combinable because they are all concerned with kinematic and kinetic data of a human subject” is not correct. Handelman is not concerned with determining kinetic data from kinematic data. In fact, Handelman teaches away from the acquisition of kinematic data as taught by Kunii and Nesbit (See column 1, lines 38-55 and column 2, line 26 -column 3, line 6 of the Background of Handelman). Handelman focuses on the creation of kinematic data rather than the acquisition of kinematic data as taught by Kunii and Nesbit. Both Kunii and Nesbit deal with recording or capturing the movements of an actual subject which are then inputted into a computer for processing. Handelman, on the other hand, does not record or capture the movements of an actual subject, but instead uses a computer model for which the user sets position points. The computer then creates the movements of the model to reach the set position points. Put simply, Kunii and Nesbit record how a subject moves from point A to point B, while

Handelman generates how a model moves from point A to point B. Therefore, there is no motivation or suggestion to combine Kunii and Nesbit with Handelman.

Therefore, in view of the above amendments and arguments, Applicants respectfully request the reconsideration and withdrawal of any rejection under 35 USC § 103(a).

**IV. Rejection of Claims 10 and 30 under 35 U.S.C. §103**

Claims 10 and 30 are rejected under 35 USC § 103(a) as being unpatentable over the combination of Kunii et al., U.S. Patent No. 5,625,577 (“Kunii”) and Nesbit et al., U.S. Patent No. 5,772,522 (“Nesbit”), and the discussion of Rodrigues vectors in the specification of the pending application. Applicants respectfully traverse the rejections on the basis of the above amendments and following arguments.

Claim 10 depends indirectly from amended claim 4 and thereby incorporates the patentable features of amended claim 4. Claim 30 depends indirectly from amended claim 25 and thereby incorporates the patentable features of amended claim 25. As stated above both claims 4 and 25 have been amended to incorporate the use of quaternions. The Examiner admits that neither Kunii nor Nesbit disclose the use of quaternions (See paragraph 7 of the present Office Action). The combination of the cited discussion of Rodrigues vectors in the pending application with Kunii or Nesbit fails to overcome the factual deficiency. Therefore the combination of Kunii and Nesbit with the cited discussion of Rodrigues vectors in the pending application does not teach or suggest each and every element of claims 10 and 30.

Therefore, in view of the above amendments and arguments, Applicants respectfully request the reconsideration and withdrawal the rejections to claims 10 and 30 under 35 USC § 103(a).

**V. Rejection of Claims 20, 21, 40, and 41 under 35 U.S.C. §103**

Claims 20, 21, 40 and 41 are rejected under 35 USC § 103(a) as being unpatentable over the combination of Kunii et al., U.S. Patent No. 5,625,577 (“Kunii”) and the text book entitled “FUNDAMENTALS OF PHYSICS” by Halliday et al. (“Halliday”). Applicants respectfully traverse the rejections on the basis of the above amendments and following arguments.

Summary of Halliday

Halliday discloses that the linear and angular momenta were commonly known mathematical expressions based on Newton's equations that represent the force and motion of an object.

Claims 20, 21, 40, and 41 Are Patentable Over Kunii and Halliday

Claims 20 and 21 depend indirectly from amended claim 4 and thereby incorporates the patentable features of amended claim 4. Claims 40 and 41 depend indirectly from amended claim 25 and thereby incorporates the patentable features of amended claim 25. As stated above both claims 4 and 25 have been amended to incorporate the use of quaternions. The Examiner has stated that Kunii does not disclose the use of quaternions. The combination of the Halliday with Kunii fails to overcome the deficiency. Therefore the combination of Kunii with Halliday does not disclose each and every element of claims 10 and 30.

Therefore, in view of the above amendments and arguments, Applicants respectfully request the reconsideration and withdrawal the rejections to claims 20, 21, 40 and 41 under 35 USC § 103(a).

**VI. Rejection of Claim 47 under 35 U.S.C. §103**

Claim 47 is rejected under 35 USC § 103(a) as being unpatentable over the combination of Nesbit et al., U.S. Patent No. 5,772,522 ("Nesbit") and Buhler et al., U.S. Patent No. 6,326,972 ("Buhler"). Applicants respectfully traverse the rejections on the basis of the above amendments and following arguments.

Summary of Buhler

Buhler discloses an integrated animation facility that provides complete control of a model view point from any elevation and azimuth.



**Claim 47 is Patentable Over Nesbit and Buhler**

Claim 47 depends from amended claim 45 and thereby incorporates the patentable features of amended claim 45. Applicants have amended claim 45 to incorporate the subject matter of claim 49 regarding performing time differentiation and integration utilizing the kinetic and kinematic data. As noted above in connection to the rejection of claim 45 under 35 USC § 102, the Examiner has admitted that Nesbit does not disclose performing time differentiation and integration utilizing the kinetic and kinematic data. The combination of Buhler with Nesbit does not overcome this factual deficiency. Thus combining Buhler with Nesbit does not teach or suggest each and every element of claim 47.

Therefore, in view of the above amendments and arguments, Applicants respectfully request the reconsideration and withdrawal the rejections to claim 47 under 35 USC § 103(a).

**VII. Rejection of Claim 49, 50 and 53 under 35 U.S.C. §103**

Claims 49-50 and 53 are rejected under 35 USC § 103(a) as being unpatentable over Nesbit et al., U.S. Patent No. 5,772,522 ("Nesbit") in view of Official Notice taken by the Examiner. Applicants respectfully traverse the rejections on the basis of the above amendments and following arguments.

**A. Claim49**

Claim 49 has been cancelled and its subject matter incorporated into claim 45. In regard to the subject matter of claim 49 concerning performing time differentiation and integration utilizing kinetic and kinematic data to which the Examiner has taken Official Notice, Applicants respectfully request the Examiner provide evidence in support of the assertion the subject matter of previously pending claim 49 was "well known." Applicants contend that it is not.

Therefore, in view of the above amendments and arguments, Applicants respectfully request the Examiner provide the requested evidence or withdraw the rejection to claim 49 under 35 USC §103(a).

**B. Claim 50**

In regard to claim 50, Applicants respectfully requests that the Examiner provide evidence in support of the assertion that the subject matter of claim 50 was “well known.” Applicants contend that it is not.

Therefore, in view of the above amendments and arguments, Applicants respectfully request the Examiner provide the requested evidence or withdraw the rejection to claim 50 under 35 USC §103(a).

**C. Claim 53**

In regard to claim 53, Applicants respectfully request that the Examiner provide support of the assertion that the subject matter of claim 51 was “well known.” Applicants contend that it is not.

Therefore, in view of the above amendments and arguments, Applicants respectfully request the Examiner provide the requested evidence or withdraw the rejection to claim 53 under 35 USC §103(a).

**VIII. Rejection of Claims 60 and 74 under 35 U.S.C. §103**

Claims 60 and 74 are rejected under 35 USC § 103(a) as being unpatentable over the combination of Nesbit et al., U.S. Patent No. 5,772,522 (“Nesbit”) and the text book entitled “FUNDAMENTALS OF PHYSICS” by Halliday et al. (“Halliday”). Applicants respectfully traverse the rejections on the basis of the above amendments and following arguments.

**Claims 60 and 74 Are Patentable Over Nesbit and Halliday**

Claim 60 depends from amended claim 54 and thereby incorporates the patentable features of amended claim 54. Claim 74 depends from amended claim 67 and thereby incorporates the patentable features of amended claim 67. As stated above in connection the rejections of claims 54 and 67 under 35 USC § 102, both claims 54 and 67 have been amended to incorporate the use of quaternions. The Examiner admits that Nesbit does not disclose the use of quaternions. The combination of the Halliday with Nesbit fails to overcome this factual deficiency. Therefore the combination of Kunii with Halliday does not teach or suggest each and every element of claims 10 and 30.

Therefore, in view of the above amendments and arguments, Applicants respectfully request the reconsideration and withdrawal the rejections to claims 60 and 74 under 35 USC § 103(a).

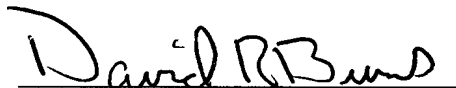
**CONCLUSION**

In view of the above, each of the currently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to pass this application to issue.

Applicants believe no fee is due with this statement. However, if an additional fee is due, please charge our Deposit Account No. 12-0080, under Order No. MGW-002 from which the undersigned is authorized to draw.

Respectfully submitted,

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